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−0.02, p=0.042), low vision in both eyes (difference: −0.02, p=0.041), and blindness in both eyes (difference: −0.10, p<0.0001) had lower EQ-5D score than those without visual impairment. Singapore Indians with low vision in both eyes (difference: −0.03, p=0.0081), low vision in one eye and blindness in the other eye (difference: −0.09, p<0.0001), and blindness in both eyes (difference: −0.16, p=0.0004) had lower EQ-5D score than those without visual impairment. After adjusted for age, gender and co-morbidities, none of the 5 eye conditions was associated with reduction in EQ-5D scores in Malays or Indians, except that Indians with cataract had lower EQ-5D scores than those without cataract (difference: −0.02, p=0.0431). **CONCLUSIONS:** Health burden is associated with visual impairment, but not with the presence of the eye conditions. Vision problems pose more health burden to Indians than Malays in Singapore.

URINARY/KIDNEY DISORDERS - Clinical Outcomes Studies

PUK1

DIURETIC ACTIVITY OF AQUEOUS EXTRACT OF BOSWELLIA SERRATA ROXB. OLEO GUM IN NORMAL ALBINO RATS

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OBJECTIVES: To evaluate the effect of aqueous extract of Boswellia serrata Roxb oleo gum on urinary electrolytes, pH and diuresis in normal albino rats. **METHODS:** Oleo gum weighing 500g was soaked in hot boiling water (1L) at room temperature for 3 days with occasional shaking. Filtrate was evaporated on rotary evaporator under reduced pressure (−760 mmHg) to a thick, semi-solid pasty mass of dark drown color that was completely solubilized in both distilled water and normal saline for in-vitro and in-vivo experimentation. Phytochemical analysis was carried out for alkaloids, saponins, anthraquinones, flavanoids and tannins. For in-vivo activity, five groups of with six animals in each were administered normal saline (10 ml/Kg, i.p.), Furosemide (10mg/kg) and crude extracts of Boswellia sarrata (10, 30 and 50mg/kg of body weight), respectively. Toxicological effect of plant was undertaken in rats at a dose of 3000mg/kg. Data was expressed as mean ± SEM and analyzed using Graph Pad Prism (Graph PAD, San Diego, USA). Student t-test was applied for data analysis. *p* values <0.05 were considered significant. **RESULTS:** Phytochemical screening of Boswellia serrata Roxb confirmed the presence of saponins and flavonoids. Furosemide induced significant diuresis and electrolytes (Na^+ & K^+) excretion while plant extracts increased urinary output and electrolytes excretion in a dose-dependent manner. Diuretic index of test groups were1.36, 2.06 and 2.9, respectively while, Lipschitz value also confirmed diuretic activity in dose dependent manner. Urinary pH remained unchanged during the course of the study whereas, no lethality was observed at the dose of 3000mg/kg. **CONCLUSIONS:** Aqueous Boswellia serrata oleo gum extracts administered particularly at the dose of 50mg/kg significantly induced water and electrolytes with no signs of toxicity.

URINARY/KIDNEY DISORDERS - Cost Studies

PUK2

ECONOMIC BURDEN OF HEMODIALYSIS AND PERITONEAL DIALYSIS IN A TERTIARY HOSPITAL IN CHINA

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OBJECTIVES: To assess economic burden associated with hemodialysis (HD) and continuous ambulatory peritoneal dialysis (CAPD) among patients with end-stage renal disease (ESRD) and treated in a tertiary hospital in China. **METHODS:** From Sept 2004 to Jan 2005, adult patients on HD or CAPD for at least 6 months were recruited. Resource utilization and costs were collected by medical records review and patient survey. The economic burden was divided into direct costs including medical (dialysis, drugs, lab, and inpatient) and nonmedical (transportation, hired caregivers, and special nutritional products) and indirect costs due to productivity loss (human capital approach). The annualized costs expressed in 2010 Yuan(¥) were analyzed using Wilcoxon test and General Linear Model with gamma distribution and log link. **RESULTS:** Eighty-six patients [50 on CAPD and 36 on standard HD (3x4-hour weekly)] were included for the analysis, with 55% male and a mean age of 57.7±15.6 years. No differences were found in age, sex, education, payment method, income, originating disease, haemoglobin level, and dialysis time between HD and CAPD. Mean(SD)/Median of annual medical expenses were ¥91,476(42,935)/¥82,478 for HD and ¥68,898(11,698)/¥68,191 for CAPD (p<0.0001); nonmedical direct expenses were ¥5,883(4,256)/¥4,780 for HD and ¥3,041(3,835)/¥1,300 for CAPD (p<0.0001). No difference was found in indirect costs [¥3,167 (6,992) for HD and ¥5,064 (8,354) for CAPD (p=0.3)]. Total annual costs were ¥100,403(44,419)/¥90,262 for HD and ¥79,859(22,210)/¥77,681 for CAPD (p=0.001). Controlling for key factors/covariates, HD patients incurred 16% higher total cost compared to CAPD patients (p=0.01). Patients with younger age (p=0.005), public health insurance (p<0.0001), or originating disease of diabetes (p=0.03) incurred higher total costs compared to their counterparts, respectively. **CONCLUSIONS:** Patients received HD incurred more direct costs compared to patients undergoing CAPD. The findings of this study may help understand the disease burden and establish cost-effective treatment modalities in ESRD from Chinese societal perspective.

PUK3

EVALUATION ON HEALTH EXPENDITURE AMONG PATIENTS WITH NEUROGENIC DETRUSOR OVERACTIVITY AFTER SPINAL CORD INJURY

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OBJECTIVES: To evaluate the annual health expenditure (AHE) in patients with neurogenic detrusor overactivity (NDO) after spinal cord injury (SCI). **METHODS:** Data containing 2 million randomly sampled individuals from the National Health Insurance Research Database (NHIRD) in Taiwan were used. Patients with emergency department visits or hospitalizations for SCI defined by ICD-9 codes 806.X and 952.X between 2006 and 2008 were retrieved. NDO was defined by: 1) diagnosis defined by ICD-9 codes 596.5 and 788.3 (excluding 596.53, paralysis of bladder); 2) pharmacological treatment for neurogenic voiding dysfunction and urinary symptoms such as alpha blockers, antimuscarinic agents, and cholinergic agents; and 3) procedures such as indwelling or intermittent catheterization defined by NHI codes 47,013C and 47,014C. All patients were followed for one year. The total AHE, as well as three subcategories, hospital, outpatient, and pharmacological treatment related cost were calculated respectively. Covariates including patient's demographics, hospital length of stay, concomitant medications, and comorbid conditions were considered in the final linear regression to compare the AHE between NDO and non-NDO group. **RESULTS:** A total of 941 eligible individuals with SCI were identified from 2006 to 2008, of whom 165 (17.5%) were NDO cases with a mean age of 54 and consisting of 64% male. The total AHE was 494,325 (±499,259) and 108,529 (±147,287) N.T. dollars in NDO and non-NDO group, respectively. After adjusting by regression model, the total AHE was higher in NDO (β=364,611; SE=21,082; p<0.001) than non-NDO group. Higher AHE was also shown in NDO in each subcategory when comparing with non-NDO. **CONCLUSIONS:** A significant impact on the financial burden of NDO was shown in this study. Higher AHE associated with NDO may also reflective of the higher severity of SCI or other comorbid conditions.

PUK4

TOTAL ECONOMIC BURDEN OF BOTH PERITONEAL DIALYSIS AND RENAL ANEMIA TREATMENT

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OBJECTIVES: To estimate the total economic burden of both peritoneal dialysis and renal anemia treatment in China. **METHODS:** Eight medical centers with regular follow-up system for peritoneal dialysis patients in 6 provinces were selected for prospective observation research. Inclusion and exclusion criteria were set down before the study through the discussion with clinical experts. Patients had been recruited in the study since July of 2011. Patient baseline characteristics, treatment and expenditure for both outpatient and inpatient during 3-months follow-up duration were recorded. Direct medical costs included fee for registration and services, medical examination, drugs and medical consumable materials. Direct non-medical costs included transportation fee and nursing fee. Off-work days were collected to estimate indirect costs. **RESULTS:** A total of 149 patients with records of 703 outpatient visits and 19 inpatient stays were collected. Mean age of patients is 50.9 with averagely 3.47 years of peritoneal dialysis treatment and 3.35 years of EPO treatment. The average frequency was 1.41 visits in medical centers per month and 1.23 visits in community health centers. The average cost of EPO was CNY1,518 (US$241) per month with average dosage of 16443IU. Total economic burden per peritoneal dialysis patient was CNY9,756 (US$1,549) per month, including CNY9,163 (US$1,454) for direct medical costs, CNY210 (US$33) for direct non-medical costs and CNY383 (US$61) for indirect costs. The share of total economic burden related to GDP per capita ranged from 1.3 times to 6.4 times in 6 sampling provinces. **CONCLUSIONS:** The total economic burden of both peritoneal dialysis and renal anemia treatment seems relatively high, which needs more attention from the government and society.

PUK5

CLINICAL AND ECONOMIC IMPACTS OF CLINICAL PHARMACY EDUCATION ON INFECTION MANAGEMENT AMONG PATENTS WITH CHRONIC KIDNEY DISEASE IN A HOSPITAL (INDONESIA)

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OBJECTIVES: This study evaluated the clinical and economic impacts of clinical pharmacy education (CPE) on infection management among patients with chronic kidney disease (CKD) stage 4 and 5 in Haji Adam Malik (HAM) hospital, Indonesia. **METHODS:** A quasi-experimental economic evaluation comparing CPE impact on six-months CKD mortality was conducted based on payer perspective. The experimental group (n=63) received care by health care providers that were given CPE on DRPs and dose adjustment. The control group (n=80) was based on the historical cohort of patients that received care before the CPE. Measure of clinical outcome applied in this study was number of lives saved/100 patients treated. Cost-effectiveness (CE) ratios for stage 4 and 5 CKD patients without CPE and with CPE, incremental cost effectiveness ratios (ICERs) for stage 4 and 5 CKD patients were analyzed. **RESULTS:** Lives saved (%) in the treatment of CKD without CPE: CKD stage 4, 78.57; CKD stage 5, 57.58. Lives saved (%) in the treatment of CKD with CPE: CKD stage 4, 88.89; CKD stage 5, 65.45. Cost- effectiveness ratios for stage 4 without and with CPEs were Rp3,593,295.97 and Rp3,348,733.27, respectively. Cost-effec-

tiveness ratios for stage 5 without and with CPEs were Rp7,870,936.19 and Rp7,137,874.93, respectively. ICERs was Rp1,486,786.41 for CKD stage 4 and Rp234,898.33 for CKD stage 5. **CONCLUSIONS:** Treatment of CKD stage 4 and 5 with CPE was more effective and cost-effective compared to those without CPE. The ICERs indicated that extra costs were required to increase life saved in both stages.

URINARY/KIDNEY DISORDERS - Patient-Reported Outcomes & Patient Preference Studies

PUK6

COMPARISON OF QUALITY OF LIFE BETWEEN HEMODIALYSIS AND PERITONEAL DIALYSIS PATIENTS IN A TERTIARY HOSPITAL IN CHINA

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OBJECTIVES: To compare health-related quality-of-life (HRQoL) in patients on hemodialysis (HD) and continuous ambulatory peritoneal dialysis (CAPD) in a tertiary hospital in China. **METHODS:** From September 2004 to January 2005, adult patients on HD or CAPD for at least 6 months were recruited with clinical and HRQoL data collected by medical records review and patient survey. Patients' HRQoL was assessed by KDQOL-SF including SF-36 as the generic and 11 disease-specific domains with higher scores indicating better HRQoL. **RESULTS:** Eighty-six patients [50 on CAPD and 36 on standard HD (3x4-hour weekly)] were included for the analysis, with 55% male and a mean age of 57.7±15.6 years. No differences were found in age, sex, education, payment method, income, originating disease, haemoglobin level, and dialysis time between HD and CAPD. CAPD patients had a higher score (SD) compared to HD patients for Effects of Kidney Disease (EKD: 55.1(15.8) vs. 40.8(10.2), p< .0001), Symptom/Problem List (SPL: 67.8(12.6) vs. 59.5(7.7), p= 0.0005), Quality of Social Interaction (QSI: 65.0(13.9) vs. 58.1(9.1), p= 0.006) and Patient Satisfaction (PS: 70.0(12.1) vs. 60.7(13.3), p=0.001). CAPD group vs. HD also had higher scores on Body Pain (BP: 60.2(14.2) vs. 45.4(18.1), p= 0.0003), General Health (GH: 33.6 (15.1) vs. 26.7(11.7), p=0.03), Role-Emotional (RE: 61.4(25.5) vs. 41.7(33.2), p=0.002) and Mental Health (MH: 67.3(14.0) vs. 55.3(19.4), p= 0.002) from SF-36 assessment. Controlling for key factors/covariates, CAPD patients still showed better scores comparing to HD patients in EKD, SPL, PS, BP, RE and MH. Older age, lower haemoglobin level and originating disease of hypertension were shown to be associated with lower scores of certain dimensions compared to their counterparts, respectively. **CONCLUSIONS:** CAPD patients showed better HRQoL in EKD, SPL, PS, BP, RE and MH than HD patients in this study population. The findings may help understand HRQoL burden and influential factors among dialysis patients.

RESEARCH POSTER PRESENTATIONS – SESSION II
RESEARCH ON METHODS STUDIES

RESEARCH ON METHODS - Clinical Outcomes Methods

PRM1

WHAT IS THE EVIDENCE ON USING SELECTED TYPES OF SUTURES FOR ABDOMINAL SURGERY – NOVEL APPROACH TO CREATE DYNAMIC TOOL FOR COLLETING AND REVIEWING AVAILABLE DATA

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OBJECTIVES: To obtain availability and assess the quality of existing evidence on effectiveness of poliglecaprone, polydioxanone and polyglactin-910 when used in different abdominal layers suturing. **METHODS:** Studies were identified by means of systematic search in MEDLINE, EMBASE and CENTRAL databases. Supplementary search for ongoing trials was also conducted. All studies published since 2000 and evaluating at least one of the selected interventions, with exception to case reports and cross sectional studies, were regarded as appropriate. Data selection was performed independently by two reviewers. Each study was characterized in detail according to predefined categories. Quality of those trials was assessed using Jadad or NOS scale depending on the type of the study. All information were subsequently exploited to create Dynamic Literature Catalogue – a novel toll for quick and efficient data reviewing. **RESULTS:** Among 119 positions qualified for full text analysis 40 publications met our inclusion criteria. Majority of those studies (n = 30) were designed as RCTs, eight were non-randomized comparative studies, one was conducted in a single arm scheme. Sixteen trials had their center location situated in Asia region. Twenty-six studies were considered as large trials including ≥ 100 patients. Target population comprised mainly adult patients. Main reported outcomes were wound infection or other complications, healing and cosmesis effects and patients satisfaction. All data extracted from publication were included in the Dynamic Literature Catalogue. To make reviewing of all selected information more efficient, we categorized them into several domains distinguished in accordance with PICO scheme. Appropriate filters allowing for quick data selection and analyzing were used in each domain. **CONCLUSIONS:** There is numerous of available evidence on using poliglecaprone, polydioxanone and polyglactin-910 in different abdominal layers suturing. We showed that reviewing and analyzing this data can be simplified and adjusted to different area of interest when Dynamic Literature Catalogue is used.

PRM2

DEVELOPMENT AND VALIDATION OF A HEALTH ECONOMIC MODEL FOR CORTICOSTEROID-INDUCED OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN WITH RHEUMATOID ARTHRITIS IN JAPAN

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OBJECTIVES: Although the WHO fracture risk assessment tool (FRAX™) has been developed, its algorithm is unpublished and not necessarily available for economic evaluations. The purpose of this study was to develop a health economic model for assessing the cost-effectiveness of osteoporosis treatment in postmenopausal women with rheumatoid arthritis, who have received combination therapy including corticosteroids in Japan. **METHODS:** We constructed risk equations for age and bone mineral density (BMD)-specific fracture applying a series of methods proposed by De Laet CE et al (1997) to epidemiological data unique to Japanese. A state transition model with six health states (no fracture, post-vertebral fracture, post-hip fracture, post-vertebral and hip fracture, bedridden, and death) was developed to predict a ten year probability of hip fracture and the ten year probability of a major osteoporoetic fracture. Model validity was verified by comparison of the predicted fracture probabilities by different combination of age (55 to 65 years) and BMD (T-score -1.5 to -2.5) between the developed model and FRAX. **RESULTS:** Individual simulation for 1,000 women aged 55, 60 and 65 years resulted in the expected life years of 31.3 to 32.3, 27.1 to 27.9 and 22.9 to 23.6, respectively, about the same as in national life table in Japan. The predicted probability of hip fracture in women with T-score -1.5, -2.0 and -2.5 were ranged to 0.8 to 1.4%, 1.4 to 2.5% and 2.9 to 5.1%, respectively, and consistent with those of FRAX as follows: 0.8 to 1.9%, 1.5 to 3.1% and 2.8 to 5.2%, respectively. As expected, our model had the tendency to slightly underestimate the probability of a major fracture because the model did not consider an occurrence of humerus fracture and wrist fracture. **CONCLUSIONS:** The model newly developed was validated and helpful for determining the cost-effective treatment thresholds for corticosteroid-induced osteoporosis in postmenopausal women with rheumatoid arthritis.

RESEARCH ON METHODS - Cost Methods

PRM3

STANDARD COST LIST FOR ECONOMIC EVALUATION IN THAILAND

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OBJECTIVES: To develop standard unit costs of medical services provided by different health facilities, cost of patients coming for treatments, and reference values used in the economic evaluation. **METHODS:** The project was conducted as a number of sub-projects. Analysis of unit cost of medical services was conducted in 5 hospitals employing the relative value unit method. Cost of health center services was calculated in 19 health centers employing standard costing and micro-costing methods. Cost of pharmaceutical services was analysed in 11 hospitals. Logistics cost of vaccines under the national vaccination program covered the supply chain from the central supplier to provincial health offices. Cost of patients coming to have treatments was collected by interviewing 900 patients from 6 health centers, 3 district hospitals and 3 provincial/regional hospitals. Reference values were obtained from documentary research. **RESULTS:** The results were published in a book, and can be accessed via the Health Intervention and Technology Assessment (HITAP) website (http://db.hitap.net/). They are composed of 3091 items of hospital medical services in two categories of hospitals: district and provincial/regional hospitals. Services of hospital pharmacy departments, and health services provided by health centers, include 9 and 68 items, respectively. Logistics cost of vaccines is presented as cost per dose of the vaccine supplied. Cost of patients is composed of distance, time, transportation cost and meal cost. Reference values are useful years of capital assets (i.e. buildings, vehicles, furniture and equipment), minimum wage, and gross domestic product per capita. **CONCLUSIONS:** This standard cost menu and reference values should make economic evaluations faster and more convenient. This is the first standard cost menu to be developed for Thailand. Some limitations exist, which will be improved upon in the next revision.

PRM4

QALY AND PRODUCTIVITY LOSS: EMPIRICAL EVIDENCE FOR "DOUBLE COUNTING"

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OBJECTIVES: Some insist that productivity loss should not be included in costs when using quality-adjusted life year (QALY) because QALY also reflects the influence of work loss and thus results in "double counting." "Double counting" of QALY and productivity loss is a controversial issue, particularly given the lack of empirical data addressing the influence of income reduction on utility scores. **METHODS:** In this study, we performed a web-based, large-sample survey to address the issue of double counting. To determine the influence of income reduction on utility scores, we obtained utility scores of eight health states with three instruction types: a) no instruction; b) instructed to consider income reduction; and c) instructed not to consider income reduction (compensated). Respondents were randomly sampled from the on-line panel adjusted by age and sex. They were asked to evaluate one of 24 patterns by both standard gamble (SG) and time trade-off (TTO) methods. **RESULTS:** A total of 6551 respondents completed the questionnaire. Respondent demographics were similar to the Japanese general population. First, despite the lack of instruction on income reduction, many respondents spontaneously assumed lost income. The proportion tended to be higher when considering more severe health states. Second, the degree of assumed income reduction was related to utility scores. For a 10% income reduction, respondents assumed a 0.02 to 0.04 decrease in utility score (both SG and TTO methods). Third, utility scores did not change significantly, even when the decrease in income was compensated. In